

## I. INTRODUCTION

Tilth is defined as the physical condition of the soil in relation to plant growth. This includes all the physical conditions that determine the qualities of a soil as a suitable environment for the plant. Generally we consider good air moisture relationships, and infiltrability of rainfall as functions of good tilth.

The purpose of tillage is to establish a good air moisture relationship in the soil, which will be congenial to plant growth. The establishment of a good tilth is usually relatively easy, but the maintenance of the tilth is quite another matter. To solve this problem we need to study the factors which contribute to the deterioration of soil tilths.

There are two groups of factors which are active in the deterioration of tilths.

1. Internal factors :- particle size, moisture, cementing agents, colloidal content, and organic matter content may be classed as internal factors. An optimum distribution of these factors in a soil will produce a good tilth. However these factors are usually present in varying degree in a soil and the lack or predominance of one or more of these factors will resist the formation and maintenance of a good tilth.

2. External factors :- temperature, rainfall, wind, compaction of the soil by machines and animals may be considered as external factors which contribute mainly to the deterioration of soil tilths.

In the sugar cane fields of Trinidad water is the major factor contributing to the deterioration of soil tilths. In this case as an internal factor in saturated, poorly drained soils, and as an external factor in the form of intense rain falling on the cultivated fields.

The purpose of this investigation was to study the deterioration of soil tilths on sugar cane fields using the rate of infiltration of water, the water stability of the clods, and the percent pores space, as indices of tilth.